METHODS AND SYSTEMS FOR POLARIZATION
MODE DISPERSION COMPENSATION

5   This nonprovisional application is a continuation of and claims priority to U.S. Appl. Serial No. 09/650,289, entitled "METHODS AND SYSTEMS FOR POLARIZATION MODE DISPERSION COMPENSATION," filed on August 29, 2000, which claims the benefit of the U.S. Provisional Application No. 60/151,959, entitled " A SIMPLE COMPENSATOR FOR HIGH-ORDER POLARIZATION MODE DISPERSION EFFECTS," filed on September 1, 1999.

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BACKGROUND OF THE INVENTION

1.   Field of Invention

The invention relates to methods and systems that compensate for polarization

15   mode dispersion.

2.   Description of Related Art

As data rates transmitted over optical conduits such as long single-mode optical fibers increase, the effects of polarization mode dispersion (PMD) become

20   increasingly important. PMD is a form of signal distortion and can be caused by subtle physical defects in an optical fiber giving rise to birefringence of the optical fibers. The effects of this phenomenon are often characterized into first-order PMD effects and higher-order PMD effects.

First-order PMD refers to the time dispersal of various components of an

25   optical signal that is essentially constant for all frequencies in a narrow band of optical frequencies. First-order PMD is equivalent to splitting a transmitted optical signal into two orthogonal polarization components along a birefringence axis of an optical fiber, and delaying one of the polarization components relative to the other, to produce multiple images of the optical signal.

30   Second-order, or higher-order PMD, refers to temporal dispersal that, unlike first-order PMD, varies a function of frequency and can result when the axis of birefringence varies along the length of an optical fiber. While the use of a PMD compensator can mitigate the deleterious effects of PMD, the vast majority of PMD compensators are designed for first-order PMD only. Accordingly, there is a need for

35   new technology to provide better PMD compensation.